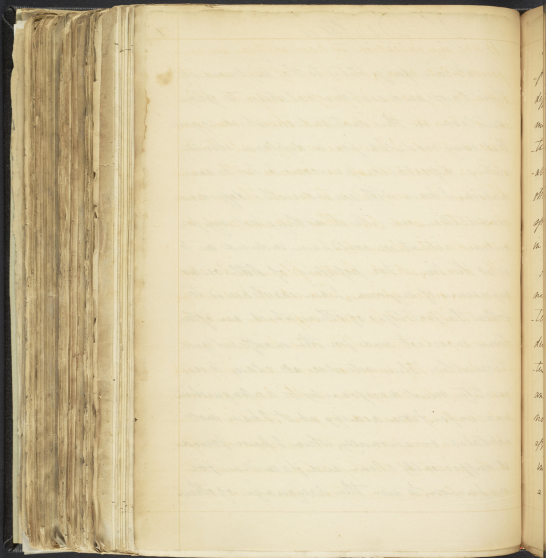


Of Diabetes

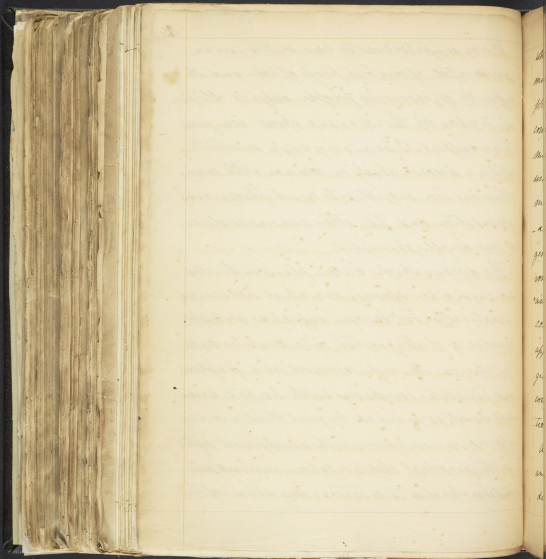
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Being subjected to the influence of those laws and customs relative to graduation in this institution, which require that every candidate for a diploma should write a dissertation previous to his examination, I have with considerable diffidence undertaken one, which nothing but my peculiar situation could have induced me to do at this time. For possessed of little or no experience of my own, I am constrained to follow the footsteps of others, which are often times incorrect and for the most part questionable. Thus situated all claim to originality must necessarily be relinquished, and so far from aiming at it, I have not hesitated occasionally, when I have found it sufficiently clear and familiar for my purpose, to use the language of others.



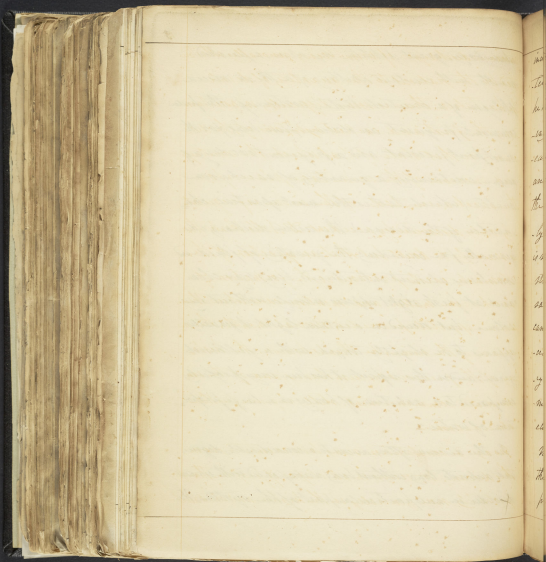
It was my intention to have written an experimental essay but press of time and the difficulty of procuring proper subjects obliged me to abandon the idea and choose some practical subject. I have accordingly selected Diabetes a disease which in common with many others has been subjected to much theory and speculation and like others remains involved in considerable obscurity.

This disease which Sullow places in the class nervous or spermic and which has been systematically but by some supposed usefully divided or distinguished into Diabetes mellitus wherein the urine is sweet and fragrant, and Diabetes insipidus with limpid urine not sweet, is marked by great thirst, a voracious appetite, accompanied with an apparent defect in the process of chylicification, wasting and a disinclination to exertion, emaciation of the



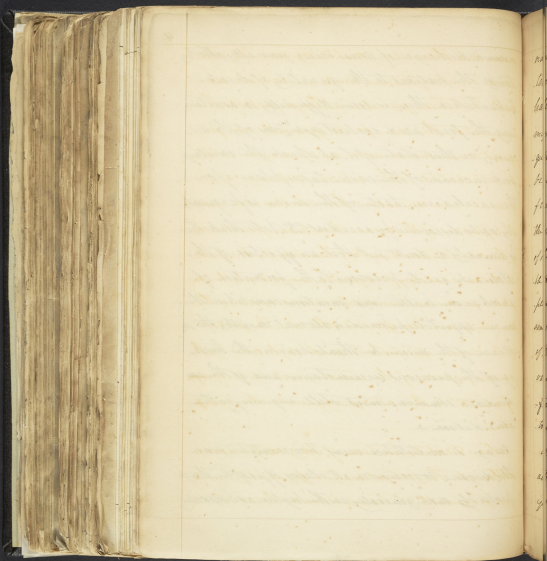
whole body, great debility, dry skin, a parched mouth, with constant spitting of a thick viscid phlegm of a sweetish taste, costiveness, the pulse commonly frequent, an obdurate firmness for the most part present, and a frequent voiding of urine, containing a quantity of saccharine matter (which last is the most essential character of the disease) the urine discharged generally far exceeding the quantity of fluid or sometimes aliment introduced, being very clear and at first sight appears entirely without any colour; but viewed in a certain light, it gradually appears to be slightly tinged with a yellowish green; and in this respect it has been very properly compared to a solution of honey in a large proportion of water.

As this disease often arises to a considerable degree, and subsists long without being accompanied with evident disorder in any particular part of the system, the



increased discharge of urine being generally attrib-
 uted by the patient to the quantity of drink
 he has taken; there is some difficulty in ascertain-
 ing the first and earliest symptoms of the dis-
 ease, or that state of it, at which the sweetening
 and increase of the urine takes place, for
 the saccharine taste of the urine is frequent-
 ly only discovered by accident. Dr. Solis thinks there
 is scarcely a doubt but that an affection of the
 stomach exists previous to the formation of
 saccharine matter and mentions cases when the
 canine appetite preceded several months the in-
 crease of the urine, he thinks however, the histo-
 ry of the previous circumstances, and of the im-
 mediate commencement, still requires further
 elucidation -

No age or constitution seems to be exempted from
 this disease. It occurs in all climes, of people, though
 probably more generally in the higher and middling



order, and those whose constitutions have been strated by intemperance. Males are said to be more liable to it than females; although probably this may not be the case, for its apparently more frequent occurrence in males, may I imagine rather be attributed to the extreme delicacy of the female sex concealing their situation when under the influence of the disease than to any peculiarity of their constitutions exempting them from it. It is probable that an hereditary predisposition may exist as to the complaint, for cases are recorded where several members of the same family have been affected with it. The progress of the disease appears to be much influenced by the various passions of the mind, such as grief and fear &c. as they always aggravate the symptoms.

When Diabetes has been of long continuance, although the patients may be apparently cured yet frequently, it leaves behind local affec-

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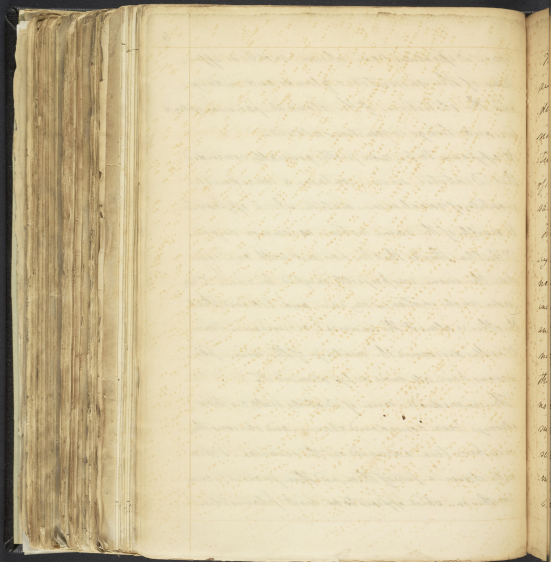
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tions. Dissections have shown morbid affections of the menteric glands and kidneys, and the structure of the stomach, pancreas, spleen, and lungs is sometimes altered.

It appears to be now pretty generally conceded that Diabetes urinae contains a considerable quantity of saccharine matter, which appears to be exactly of the same nature as common sugar.

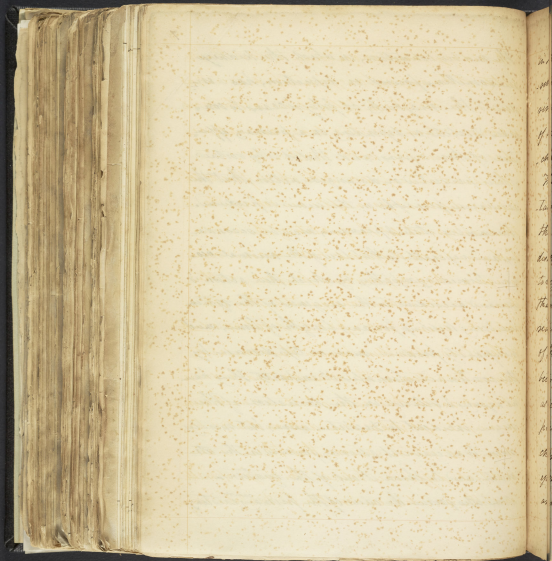
D. Baulin thinks that he has met with one case where the urine was perfectly impured, he seems to consider such instances very rare, and believes that the other is almost the universal occurrence. Min. D. Willis discovered the sweetness of the urine physicians have all more or less observed it.

The immediate cause of Diabetes mellitus has always been considered obscure, and various theories have been advanced on the occasion. I shall only observe a few of them, and then proceed to mention the one which appears to me most plausible.



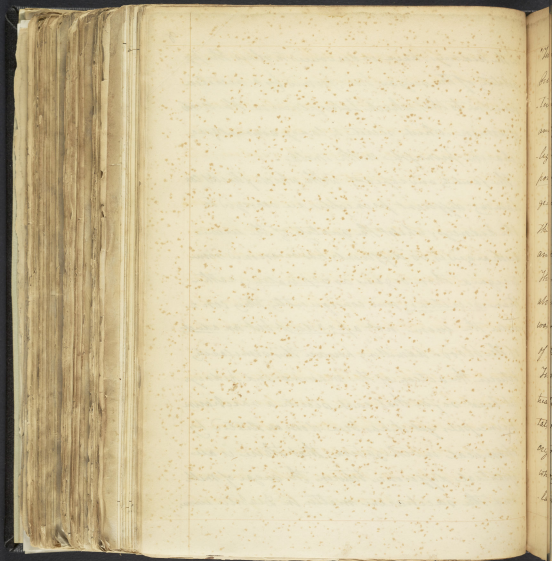
The morbid condition, in which the kidneys are sometimes found in dispection, has induced the majority of physicians to consider Diabetes as depending on a primary affection of those organs, and that it is by virtue of their perverted or deranged action that the saccharine principle in the urine is produced.

This morbid state of the kidneys may be secondarily, and referable to that law of the animal economy termed, *sympathy*, by which their action is increased according to the exigencies of the system, and being kept up for any length of time, must necessarily produce more or less disease by the continued stimulus it imparts. They have no agency I believe in the formation of the sugar incident to Diabetic urine; but merely serve to receive it as it is formed in the stomach, and to throw it out of the system. Some who favour the idea of the primary ^{cause} existing



in the kidneys, have endeavoured to show the possibility of the sugar being formed by a secretion similar to that which takes place in the breasts of women, which secrete a large amount of saccharine principle in the milk.

The faculties and capacity with which glands containing different principles, are conveyed to the kidneys, whilst the quality of the urine discharged is so different, has occasioned some to regard those organs as sécrétant, rather than secreting; and consequently, they consider the urine not a product but an educt of the blood. Admitting however this similarity between the action of the mammae and kidneys at least so far that each secrete a saccharine principle, yet it has been demonstrated by chemical investigation, that there is an essential difference between the sugar of milk and the saccharine matter in Diabetic urine.



Two drams of the sugar of milk were dissolved by
 Birch's extract, in 12 drams of nitric acid, de-
 luted with 3i of water. This was carefully evaporated,
 and put to cool; which being done, a crystal-
 lized magnesia mixed with a certain white
 powder. The precipitate weighed about 58
 grains. Six drams of boiling water were added.
 The crystals of oxalic acid were dissolved,
 and the white powder remained unchanged.
 This was separated by filtration, and weighed
 about 10 grains; and by further experiment,
 was found to possess all the peculiar properties
 of saccharatic acid.

Two drams of the extract of Diabetic urine were
 heated at the same time in a similar way, crys-
 tals formed but no white powder appeared. The
 crystals weighed about 40 grains; and were
 wholly dissolved in boiling water. No saccha-
 ratic acid was produced in this experiment.

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which was repeated several times on the extract of urine from different Diabetic patients.

It would seem from these experiments of Mr. Berchshank, that the essential difference between the sweet extractive matter of Diabetic urine, and sugar of milk, consists in the former not containing the basis of saccharatic acid. It would also appear from hence that the sugar of milk was produced by a process of animalization, whereas the saccharine principle of Diabetic urine should be regarded as a vegetable extract combined with a greater or less proportion of animal mucus, resembling very much honey, which is not a product of animalization but of vegetables.

A certain state of the bile has been supposed to produce this disease.

It is probable that it has sometimes occurred in persons who were at the same time affected with

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disease of the liver. But I apprehend that this can not frequently be the case, for Dr Cullen observes that in twenty instances which he has seen of Diabetes, there was no evident affection of the liver in any one of them.

Dr Richter, professor of medicine in the university of Göttingen, supposes Diabetes to be commonly of a spasmodic nature, occasioned by a stimulus acting on the kidneys; hence an increased secretion, and sometimes perverſe is the consequence.

It is true that irritation may sometimes occasion an increase in the discharge of urine, but how it effects the singular change which takes place in its composition, I imagine can not easily be accounted for.

No Hypothesis yet advanced seems to prove in a satisfactory manner the primary seat of this disease, but from the weight of evidence and an attentive consideration of all the cir-

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symptoms attending it, I am induced to believe
 that it is altogether a disease of the stomach.
 I am led to this opinion, in the first place, from
 its often attending other diseases of that or-
 gan, such as hypercæmia, hypochondriasis and
 dyspepsia in the second from the vari-
 ous appetite, indigestion and costiveness which
 almost invariably attend it in the third from
 its general occurrence in those whose consti-
 tutions have been shattered by intemperance,
 in drinking or other excess, the effects of which
 are primarily exerted on the stomach.

Dr. Boer in his lecture on Diabetes, read before
 the class last winter, wherein he appeared to take
 the correct view, and supported his opin-
 ion with the most conclusive arguments. He
 held that the stomach was to be regarded as the
 primary seat of the disease; that the saccharine
 matter is compounded or evolved from vegetable

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substance taken in. Scarcely Metabolized he went on to say, appeared to arise from an action of the stomach, morbidly increased, by which a large quantity of gastric liquor was secreted, which also by its morbid nature, seemed capable of decomposing the vegetable matters, and thereby of producing the saccharine principle incident to the disease, in which, vegetables do not appear to undergo the changes that take place in health, but become quickly changed into the saccharine principle.

In health, an uniform and perfect chyle is prepared, and applied to the salutary purposes of the animal economy. In its composition, sugar appears to be an essential article, but it undergoes the proper changes, whereas in this disease it remains unchanged, producing other morbid affections, besides those on which its undecomposition depends and is thrown

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The allocation and increase in the secretion of the gastric fluid, appears to be the necessary consequence of the morbid action of the stomach. The great quantity of viscid matter ejected by vomiting in this disease, together with the nature and rapidity of digestion, supports the opinion of such an increase in the gastric fluid.

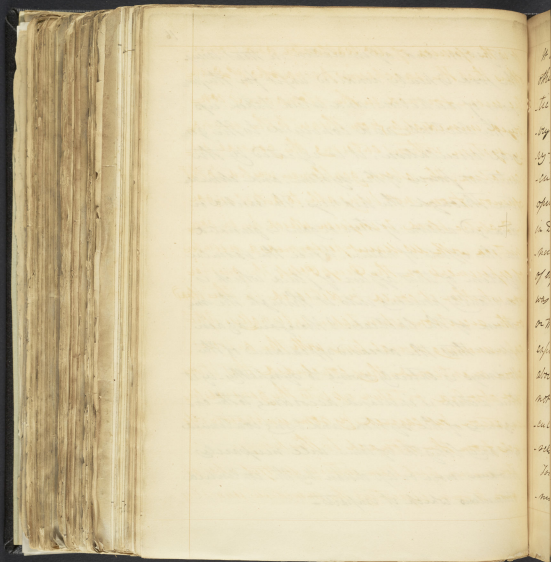
To the formation of saccharine matter, is the explanation of the increase in the quantity of urine principally referable, although from the intimate connection between the stomach and kidneys, we may suppose that independent of the saccharine matter, so long as the increased action of the stomach remain, a proportional quantity of urine will continue to be discharged.

In addition to the arguments derived from

the disease itself, we have the observation of many practitioners of the highest eminence which very satisfactorily prove, that the blood of Diabetic patients, contains sugar in its composition - we learn from the experiments of Dr Dobson that he detected sugar in the blood of persons labouring under Diabetes. In a case of Diabetes which fell under the observation of the late professor Barton, his patient discharged daily large quantities of saccharine matter in his urine. On having him bled and testing the serum of the blood, the presence of sugar was distinctly exhibited. The experiment was repeated several times, and with the same result.

From the facts above related, I imagine I am warranted in the conclusion, that the stomach is the primary seat of the disease: depending upon some change in the natural process

of digestion and assimilation in that sense.
 The food is highly rendered unfit for the pur-
 -poses of nutrition, and when taken up
 by the lacteals, and conveyed to the gen-
 -eral circulation, it is rejected by the
 nutrient powers of the system, and elimina-
 -ted through the kidneys. The morbid or
 deranged action of these organs is generated
 in the efforts of nature, to free the vascular
 system of that afflux of fluid which is
 constantly pouring into it through the me-
 -dium of the lacteals. I therefore again
 repeat that the diseased appearance of the
 kidneys is entirely owing to sympathy - by it
 their action is increased according to the ex-
 -igencies of the system; and being continued
 for any length of time, will necessarily
 produce more or less disease by the continued
 stimulus which it imparts -



It is the opinion of Mr Wallaston and some others that the saccharine principle of Diabetic urine formed in the stomach, is conveyed immediately from thence to the urinary system, without entering the general circulation. The above gentlemen wished to test this opinion from not being able to detect sugar in Diabetic blood. To confirm which he, in conjunction with Mr. Macle performed a number of experiments on the Pump. Perhaps the question was whether it could be detected in the blood or the excretions, when taken internally. After experimenting several times with the article above mentioned, they concluded, that it was not absorbed or taken up into the general circulation, but carried by some unknown vessel from the stomach to the kidneys.

For my own part I am entirely doubtful what opinion to form respecting this immediate connection

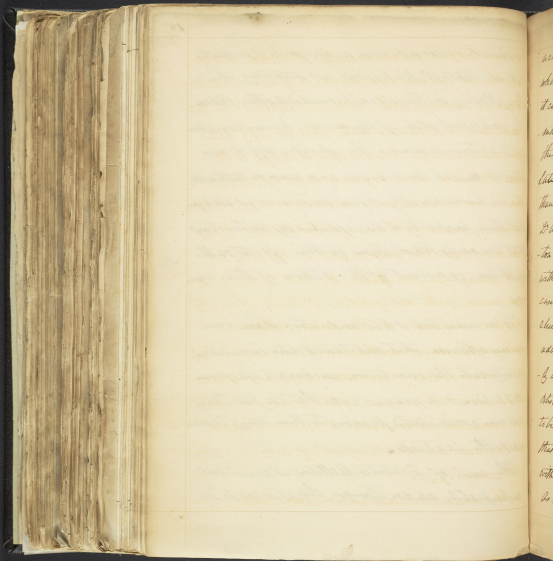
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between the stomach and kidneys. It is probable
however that Mr Wallaston not detecting the
Purp. Polyp in the blood proceeded rather from
the imperfect state of Chymical knowledge, than
to its actual absence. The specific difference
between marsh miasma and common atmospheric
air, have never yet been discovered, yet all agree
that their properties are essentially distinct, and
that we only know them by their effects on the
system, ignorant of the nature of their agen-
-es

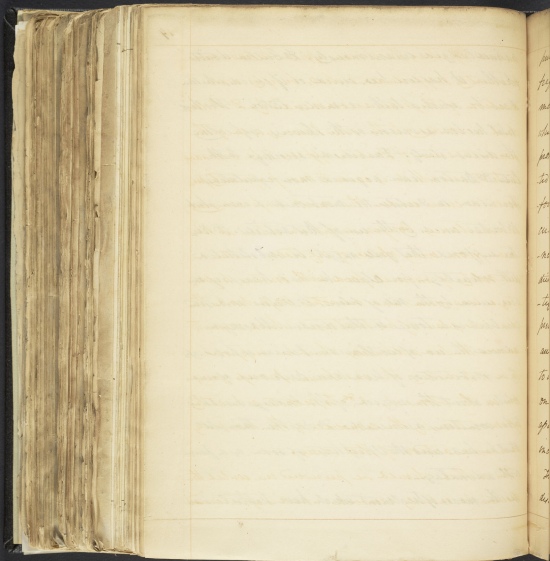
By no means can it be understood from hence
as my opinion, that substances enter indiscrimi-
-nately into the circulation unchanged, for from
it I believe as a general rule that all substan-
-ces are assimilated previous to their being taken
up by the lacteals.

The cure of Diabete Mellitus is as yet but
imperfectly understood. This appears to be



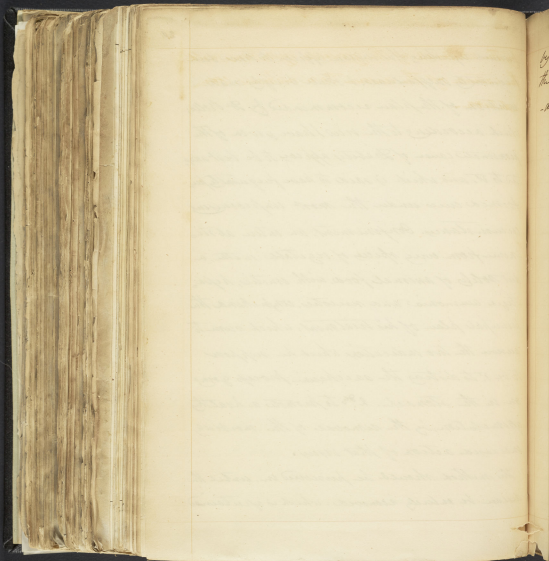
acknowledged unanimously. Dr Bullen doubts whether it has ever been cured, or if cured, whether it can be avoided to the remedy taken. The treatment has been as various as the theories respecting the disease itself. Two remedies according to the late Dr. Baeton have acquired more reputation than alum in Diabetes. He mentions a case which Dr Wislizen cured by the use of that article. Dr Baeton supposed that galls might be substituted with advantage for alum. He had heard of one case cured by the use of silver. Dr Haller exhibited chubaid as a tonic in this disease. Mascagni advised the use of cathartics. Turcan employed highly a combination of Uva Ursi, Bark and opium. Absters about the region of the kidneys are said to be sometimes serviceable. Dr Baeton thought that he had used the Phosphate of soda as a purgative with advantage.

As the modes of treatment which have hitherto been



pursued respecting this disease appear to have been
 frequently ineffectual. I shall briefly make
 mention of the plan recommended by Dr. Rollo;
 which according to the view I have given of the
 proximate cause of Diabetes appears to be best adap-
 ted to it, and which is said to have frequently suc-
 ceeded under the most unfavourable
 circumstances. Confinement, an entire abstin-
 -ence from every species of vegetable matter, a
 diet solely of animal food, with emetics, hydra-
 -tixia ammonia and narcotics, comprehend the
 principal plan of his treatment, which seems to
 answer the two indications which he supposes
 to be 1st to destroy the saccharine mucus going
 on in the stomach. 2^d to promote a healthy
 assimilation, by the removal of the morbid
 increased action of that organ.

This method should be pursued in, until the
 disease be entirely removed, which is ascertained



21
by the removal of the general system, and
the return of the urine to a natural con-
-dition.

